ABSTRACT

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Title of diploma thesis:

The influence of parameters of samples on mechanical properties of biological materials.

In this diploma thesis I dealt with the influence of dimensions of samples of biological material, namely bovine bones, to change their mechanical characteristics measured in static and dynamic mode. Samples were measured on a dynamic elastomers developed at the Department of Biophysics and Physical Chemistry.

For our experiment we obtained three samples that had different dimensions, in terms of width, height and length. It was the shin bone (tibia) of a young bull (Bos taurus primigenius f). Animal slaughter age was 20 weeks and the bones were obtained 1 day after slaughter.

Impulse response for each sample was measured three times. After every fifth repeated measurements, the distance between the sample and movable measuring system has shrunk by 2 mm. The computer evaluated dynamic modul E_d and viscosity η - which we then transformed into a graph, such as dependence on length.

Step characteristic for each sample was measured three times. After every fifth repeated measurements, the distance between the attachment of the sample and the glass tube measuring apparatus, has shrunk by 5 mm. The computer has assessed the value of static stiffness, from which we calculated Young´s modul *E*. We prepared a graph of measure value of Young´s modul, such as dependence on the length of the sample.